

this time the sap was no longer a problem. The whole process lasted about twenty minutes.

It is a feature of the milk parsley that when a leaf, or, to a lesser extent, a stem is punctured there exudes a blob of tacky milk-like sap which gradually hardens on exposure to the air. The larvae appear not to tolerate this, and make incisions slightly lower down on the plant, which presumably reduce the pressure of the sap to a level which enables the larvae to feed unhindered.

This behaviour continued until the larvae were fully fed although the sap does not seem to trouble the larger larvae to any great extent.

The resultant imagines are the finest marked, and on average the largest I have ever seen. On the whole, I think the little extra effort (and petrol) involved in ensuring a healthy supply of growing milk parsley well worth while.

As a sequel to the above, my fiancée, whilst on holiday with me at Seefeld in Austria, found a second instar larva of this butterfly on wild carrot (*Daucus carota*). On arrival back home, it was placed on milk parsley and exhibited, to a much more marked degree, the same behaviour as observed with the English individuals, which by this time had all pupated, following approximately three weeks in the larval state.

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## Notes on the Indian Species of the Genus *Paralabis* Burr (Dermaptera : Carcinophoridae)

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### INTRODUCTION

Burr (1915) erected the genus *Paralabis* for the reception of the following species:—*Nannopygia dohrni* Kirby, 1891; *Anisolabis greeni* Burr, 1899; *Anisolabis pervicina* Burr, 1913 with *Anisolabis owenii* Burr, 1911 as the type species of Srivastava (1969) has established the genus *Aborolabis* with *A. pervicina* as its type.

While studying the members of the family Carcinophoridae from India I have come across two more species of the genus *Paralabis* viz., *Paralabis aborensis* (Burr, 1913) and *Paralabis montshadskii* Bey-Bienko, 1959. On the basis of the shape of parameres, *Psalis lefrovi* Burr, 1910, is also placed under this genus, thus bringing the total to five species from India. Specimens of all the five species, present in the collections of the Zoological Survey of India, Calcutta, have been examined.

In the present paper I have made an attempt to redefine the status of the genus and the species. Brief notes to the species are also given.

### DIAGNOSTIC CHARACTERS OF THE GENUS *Paralabis* BURR

*Male*: Head triangular, longer than broad, sutures faint or obsolete; eyes black or sometimes whitish. Antennae 17 to 19-segmented, dark brown to blackish brown, sometimes a few apical segments whitish, 1st long and conical; 2nd small; 3rd long and cylindrical, slightly longer than 4th and almost equal to 5th; 4th conical or cylindrical; 5th and 6th cylindrical and rest gradually increasing in length. Pronotum quadrat, longer than broad, hind margin rounded, gently widened pos-

teriorly, sides straight. Elytra abbreviated or perfect, sometimes totally absent. Legs unicolorous, often banded with black. Abdomen smooth or punctate, narrowed anteriorly, sides of 6th to 9th abdominal segments obtuse or acute, smooth or punctate, carinate or ecarinate. Ultimate tergite usually transverse, often longitudinal fold on sides present, median suture faint or distinct. Penultimate sternite triangular with posterior margin rounded, obtuse or acute; manubrium longer than the sternite with apex dilated. Forceps usually slightly asymmetrical, trigonal near the base, curved at apices, inner margin finely crenulate or smooth. Genitalia (figs. C and F) typical of the family with parameres about as long as broad, broader at base or middle, narrowed towards apex, tip rounded, external margin regularly convex and inner margin generally concave; distal lobes unarmed or variously armed.

*Female*: Similar to males except the weakly transverse ultimate tergite, narrowed apically; forceps simple and straight.

*Distribution*.—Ethiopian and Oriental Regions.

#### KEY TO THE INDIAN SPECIES OF THE GENUS *Paralabis* BURR

1. (2). Penultimate sternite with posterior margin emarginate .....  
*P. montshadskii* Bey-Bienko
2. (1). Penultimate sternite with posterior margin rounded or obtuse
3. (4). Distal lobes unarmed ..... *P. greeni* (Burr)
4. (3). Distal lobes variously armed
5. (6). Distal lobes armed with a pair of chitinous, denticulate rods apically ..... *P. aborensis* (Burr)
6. (5). Distal lobes armed with minute chitinous teeth apically
7. (8). Elytra with posterior margin truncate ..... *P. dohrni* (Kirby)
8. (7). Elytra with posterior margin very slightly obliquely truncate.....  
*P. lefroyi* (Burr) comb. nov.

#### SYSTEMATIC ACCOUNT

##### *Paralabis dohrni* (Kirby)

*Labidura femoralis* Dubrony (nec Dohrn), 1879. *Ann. Mus. Stor. nat. Genova*, **14**, p. 352.

*Nannopygia dohrni* Kirby, 1891. *J. Linn. Soc. (Zool.)*, **23**, p. 508 (♀; Ceylon).

*Carcinophora caeruleipennis* Bormans, 1900. *Das Tierreich*, **11**, p. 40.

*Carcinophora dohrni*: Burr, 1902. *J. Bombay nat. Hist. Soc.*, **14**, p. 328, pl. B, fig. 20 (♂, ♀; Description).

*Psalis dohrni*: Burr, 1910. *Fauna Brit. India, Dermaptera*, p. 76, pl. 3, fig. 19.

*Paralabis dohrni*: Burr, 1915. *J. R. micr. Soc. Lond.*, p. 540, pl. 12, fig. 1 (Genitalia).

General colour reddish to blackish brown, pronotum yellowish on sides, femora banded with black. Pronotum longer than broad, gently widened posteriorly, sides straight, hind margin rounded, median longitudinal suture faint. Elytra smooth, shining, black or reddish with posterior margin truncate. Wings generally absent, rarely present. Abdomen gently widened posteriorly, surface finely punctulate, sides of 6th to 9th abdominal segments in ♂ obtusely rounded. Ultimate tergite in ♂ transverse, on sides with a faint longitudinal fold. Penultimate sternite somewhat triangular with posterior margin rounded.

Length of body	♂	♀
(without forceps) .....	10-12 mm.	9.5-12.5 mm.
Length of forceps .....	2-2.5 mm.	1.9- 2.5 mm.

*Distribution.* — India: Andhra Pradesh, Assam, Kerala and Maharashtra. Ceylon.

*Paralabis greeni* (Burr)

*Anisolabis greeni* Burr, 1899. *Ann. Mag. nat. Hist.*, (7) 4, p. 257 (♂, ♀; Punduloya, Ceylon).

*Borellia greeni*: Burr, 1910. *Fauna Brit. India, Dermaptera*, p. 87.

*Euborellia greeni*: Burr, 1911. *Genera Insect.*, 122, p. 30.

*Paralabis greeni*: Burr, 1915. *J. R. micr. Soc., Lond.*, p. 540, pl. 12, fig. 2 (Genitalia).

General colour varies from dark brown to blackish brown, often legs brick red. A very distinct species in having the head, pro- and mesonotum, elytra and dorsal surface of abdomen punctate. Penultimate sternite triangular with posterior margin obtuse. Forceps in ♂ weakly asymmetrical, subcontiguous at base, inner margin with a faint tooth at about middle or nearer to the base.

Length of body	♂	♀
(without forceps) .....	11.5-23.5 mm.	16.4-18.24 mm.
Length of forceps .....	2-3 mm.	3.2- 3.42 mm.

*Distribution.*—India: Madras and Mysore. Ceylon.

*Paralabis lefroyi* (Burr) comb. nov.

*Anisolabis brunneri*? Burr (nec Dohrn), 1906. *J. Asiat. Soc. Beng.* (N.S.), 2, No. 9, p. 389.

*Psalis lefroyi* Burr, 1910. *Fauna Brit. India, Dermaptera*, p. 77, pl. 3, fig. 20 (♂, ♀; Bombay: Mahim "feeding on plantain roots"; Pusa, Bengal).

*Eurborellia lefroyi*: Kapoor, 1967, *Agra Univ. J. Res. (Sci.)*, 16 (1), p. 11 (comb. nov.).

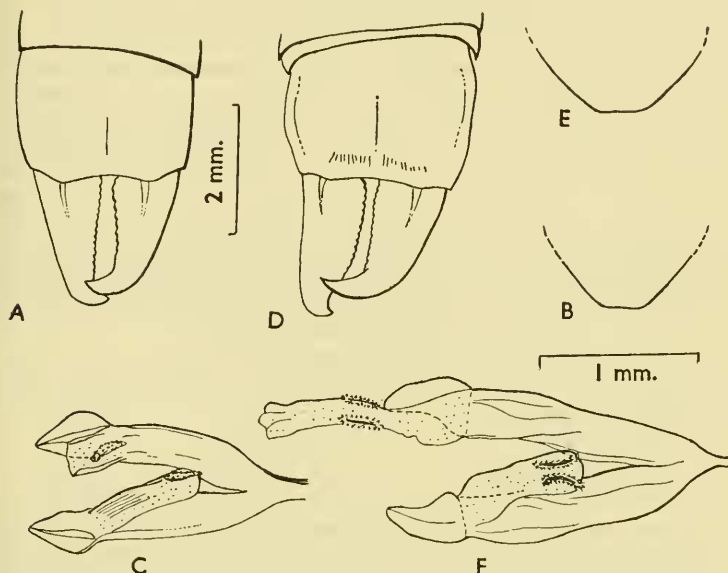
There are 3 ♂♂ before me (India, Madhya Pradesh, Shahdol Dist., 1 ♂, Amarkantak, 14.v.1962, *S. Chakrapani* coll.; 1 ♂, left bank of Narbada between Kund and Kapildhara, 22.v.1965; 1 ♂, Doodh Dhara, 2nd waterfall of Narbada River, Amarkantak, 9.v.1962, *P. Singh* coll.) which I am referring to this species as these are agreeing well with the original description and illustration (pl. 3, fig. 20) of Burr (1910) except the ultimate tergite which is strongly transverse, not narrowed posteriorly and forceps curved at apices.

It will be worthwhile to mention here that although the legend to Burr's said figure reads as '♂' the shape of ultimate tergite and forceps suggest it may be a ♀. With these points I wrote to Mr John Huxley to kindly clear my doubt regarding the sex of the 'Type'. He has very kindly informed me that British Museum (Natural History), London, possesses two specimens, i.e., 1 ♀ and another probably a ♂ nymph, both these labelled as 'Bombay, Mahim, 22.ii.1904, on plantain roots' which should be best regarded as 'Syntypes' since none of these are identifiable as 'Types' either from the original description or labels. And probably the ♀ mentioned above has been figured by Burr (1910, pl. 3, fig. 20). Following is some more information regarding the said syntypic pair as supplied by him.

"1. ♀. Elytra present; wings absent; sides of abdominal terga ecarinate, finely punctulate as dorsal surface. Probably the specimen figured in

## Fauna.

2. ? ♂ nymph. Elytra and wings totally absent. ♂ number of abdominal terga, ecarinate, sparsely punctulate at sides. No detectable genitalia, no manubrium."



*Paralabis lefroyi* (Burr): ♂, A. Ultimate tergite and forceps; B. Posterior margin of penultimate sternite; C. Genitalia. *Paralabis aborensis* (Burr): ♂, D. Ultimate tergite and forceps; E. Posterior margin of penultimate sternite; F. Genitalia. (A, B, D and E same scale and C and F same scale).

It has been clearly mentioned by Burr (1910, p. 78) that he has described the species from a single pair in poor condition, which is now deposited in the British Museum (Natural History) London, from the locality as mentioned above. There is mention of another locality (Bengal: Pusa) also in the publication. In my opinion it has been given for those specimens from Purneah Dist. which were earlier (1906) referred by Burr, doubtfully to *A. brunneri* and later on (1910, p. 78) as immature specimens of this species.

Altogether ten specimens were referred to *A. brunneri* by Burr (1906, p. 389) which is obvious from the registered Nos. mentioned in the publication. Out of these ten, only three specimens with reg. Nos. 9530-9532/14, Purneah Dist., N. Bengal (now in Bihar) and labelled as Juv. ? *Psalis lefroyi* Burr, are present in the Zoological Survey of India, Calcutta. The specimen with reg. No. 9525/14 appears to have been lost since only the pin with various other labels is left. All the specimens lack elytra and are probably the nymphs of this species as stated by Burr.

The species is redescribed below.

*Male*: Head blackish brown, smooth, about as long as broad, triangular, posterior margin gently emarginate in middle, sutures faintly marked, frons tumid. Antennae 17-segmented, blackish brown except the segments 2nd, 13th and 14th yellow. Pronotum blackish brown with sides yellow, longer than broad, anterior margin straight, sides very faintly concave in middle, posterior margin rounded, median suture distinct. Elytra black with posterior margin very slightly obliquely truncate, small scutellum visible. Wings absent. Legs yellow, femora banded with black. Abdomen punctulate, gently widened posteriorly, sides of segments 6th to 9th in ♂ rugosely punctulate. Ultimate tergite (fig. A) transverse, longitudinal fold on sides present, median sulcus prominent in posterior half only. Penultimate sternite (fig. B) triangular with posterior margin briefly rounded, manubrium three times as long as the sternite and dilated at the apex. Forceps with branches subcontiguous at base, triangular with ridge in basal one third only, weakly asymmetrical, with right branch more curved and crossing over the left one near the apex, tip curved and pointed, inner margin finely crenulate throughout. Genitalia (fig. C).

*Female*: Almost similar to males except the weakly transverse ultimate tergite narrowed posteriorly and forceps with branches straight, apices pointed and not hooked.

Length of body	♂	♀
(without forceps) .....	12.2-13 mm.	9 mm.
Length of forceps .....	2-2.2 mm.	1.75 mm.

*Distribution*.—India: Bihar, Maharashtra, Madhya Pradesh and Mysore.

*Remarks*.—This species closely resembles *P. dohrni* (Kirby) but it can be easily distinguished by its slightly larger size; comparatively stouter build and the elytra obliquely truncate at the posterior margin.

#### *Paralabis aborensis* (Burr)

*Euborellia aborensis* Burr, 1913. *Rec. Indian Mus.*, 8 (2), p. 137 (♂, ♀; Assam).

*Paralabis aborensis*: Srivastava, 1968. *Ent. Rec.*, 80, p. 292 (comb. nov.).

General colour reddish chestnut with shades of yellow and black. Elytra present or absent. Abdomen punctulate and clothed with long and reddish hairs, sides of segments 7th to 9th in ♂ carinate and rugulose. Branches of forceps (fig. D) unarmed and asymmetrical in ♂ and in ♀ simple and straight. Genitalia (fig. F).

Length of body	♂	♀
(without forceps) .....	12.4-14 mm.	12-15.9 mm
Length of forceps .....	2-2.5 mm	2-3 mm.

*Distribution*.—India: Assam (Rotung, Janakmukh and Dibrugarh).

#### *Paralabis montshadskii* Bey-Bienko

*Anisolabis (Paralabis) montshadskii* Bey-Bienko, 1959. *Ent. Obozor.*, 38, No. 3, p. 600, fig. 16 (♂, ♀; China, Yunnan).

*Paralabis montshadskii*: Srivastava, *Rec. zool. Surv. India*, Calcutta, figs. (In press).

Size medium, built stout, general colour dark brown or black. Pronotum with apical margin and sides straight, posterior margin briefly rounded. Legs unicoloured or sometimes femora banded with black.

Elytra and wings absent. Abdomen in ♂ punctulate, sides of segments obtuse, rugosely punctate; ultimate tergite transverse, narrowed apically, median suture faint, with tumid elevations laterally above the bases of forceps. Penultimate sternite in ♂ with posterior margin emarginate in middle. Forceps in ♂ heavy, trigonal in basal one third, crossing near the apex, inner margin unarmed; in ♀ branches straight and contiguous.

	♂	♀
Length of body (without forceps) . . . . .	11.5-14.63 mm.	10.35-13.01 mm.
Length of forceps . . . . .	2.2-2.5 mm.	1.97-2.37 mm.

*Distribution.*—India: N.E.F.A., Kameng Division, Rahung and Chug village. China: Yunnan.

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## Notes and Observations

HYDRILLULA PALUSTRIS HÜBN. IN LINCOLNSHIRE.—On 21st June 1902 J. F. Musham and C. P. Arnold took a male specimen of this species near a fresh water marsh in the coastal sand dunes at Theddlethorpe. Repeated visits by many entomologists have failed to produce a second specimen.

On the morning of the 13th June of this year, I found a male *H. palustris* in the mercury vapour light trap in my meadow. Mr R. P. Demuth has very kindly confirmed the identity of this specimen. The meadow overlooks a fresh water marsh some four hundred yards away. Beyond this is some wet woodland, very reminiscent of Wood Walton Fen, and beyond this a second marsh. In both marshes there is an abundant growth of meadow-sweet. I do not think that either of these marshes has ever seen an entomologist in the past. I have only recently come to live in this area and it would appear that my time could be spent very profitably next year in a thorough investigation of this wetland area.—R. E. M. PILCHER, The Little Dower House, South Thoresby, Alford, Lincs. 16.xi.1970.